

ORGDP

OAK RIDGE GASEOUS DIFFUSION PLANT

MARTIN MARIETTA

THE OAK RIDGE GASEOUS DIFFUSION PLANT K-1407-H AND K-1407-A CENTRAL NEUTRALIZATION FACILITY WASTE ACCEPTANCE CRITERIA

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Central Neutralization Facility Waste
Acceptance Criteria

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The Oak Ridge Gaseous Diffusion Plant
K-1407-H and K-1407-A
Central Neutralization Facility
Waste Acceptance Criteria

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SUMMARY

The CNF is operated to receive, treat, and discharge waste water in an environmentally acceptable manner provided the requirements of the acceptance criteria have been met. The capability of the facility to treat wastes with constituents significantly exceeding the maximum limits is in place. It is necessary that the generator provide a characterization well in advance of treatment needs to permit the necessary testing to determine the appropriate treatment protocol. Waste received for treatment at CNF that does not meet these criteria must be approved and documented on the waste disposal form prior to being transported to CNF.

INTRODUCTION

The following waste acceptance criteria applies to liquid effluents treated in the Central Neutralization Facility (CNF) at the Oak Ridge Gaseous Diffusion Plant (ORGDP). This facility treats wastes for release through National Pollutant Discharge Elimination System (NPDES) permit points to Mitchell Branch and Poplar Creek.

SYSTEM DESCRIPTION

The CNF has provisions for the treatment of nonhazardous and hazardous wastes. Nonhazardous flow entering the CNF consists of coal pile runoff, steam plant effluents, and various small quantity or infrequent streams from waste disposal requests. Hazardous flow includes effluents from the Toxic Substance Control Act (TSCA) incinerator, K-1420 Decontamination Metal Finishing Facility, K-1401 Metal Cleaning Facility, and various small quantity or infrequent streams from waste disposal requests. In the present configuration of the facility, the F-240-A reaction tank (25,000 gallon capacity) is dedicated to receive nonhazardous streams, while hazardous wastes are treated in the F-240-B reaction tank (25,000 gallon capacity).

The CNF has various treatment capabilities. Adjustment of pH is provided by the use of 20% lime slurry, sulfuric acid, or hydrochloric acid. A chemical addition building (CAB) has been added to the facility and provides the means of mixing and delivering treatment chemicals into the CNF reaction tanks. The CAB provides capabilities to achieve lower effluent concentrations leaving the facility.

The CNF also contains a polymer addition system. This system enables polymer to be added to the effluent lines leaving the F-240-A and B reaction tanks to enhance flocculation of the precipitates.

Water from coal pile runoff and steam plant effluents are collected in the 10,000 gallon coal pile sump and then pumped into the F-240-A reaction tank for treatment. After treatment, nonhazardous effluents are pumped to the K-1407-E and K-1407-F Ponds for solids settling. When full these ponds are released through NPDES monitoring points into storm drains that flow into Mitchell Branch.

Hazardous wastes treated in the F-240-B reaction tank are collected in the 8,000 gallon CNF central collection sump and the 10,000 gallon F-263 underground tank, or are pumped directly to 240-B from K-1420 and the TSCA incinerator. Once treated, hazardous streams are pumped to the 65,000 gallon sludge thickener. Overflow from this thickener is pumped to one of two K-1407-J settling basins which have a capacity of 100,000 gallons each. When full, these

basins are released through an NPDES monitoring point to Poplar Creek.

WASTE ACCEPTANCE CRITERIA

A. General Requirements

1. Generators must certify waste streams that are sent to the CNF for treatment.
2. All wastes, excluding virgin chemicals, must be characterized from at least the following analyses.
 - a. Metals by Inductively Coupled Plasma (ICP).
 - b. As, Se, and Hg by Atomic Absorption Spectroscopy (AAS).
 - c. Duplicate confirming analyses for total uranium.
 - d. Duplicate confirming analyses for uranium isotopic enrichment. Note: Generator certification through process knowledge may serve as one of these analyses.
 - e. pH.
 - f. Nitrate. Note: This analysis will not be required if through process knowledge the generator will certify that this constituent is not present.
 - g. Total toxic organics (TTO) by Gas Chromatography/Mass Spectrometry.
 - h. Cyanide. Note: This analysis will not be required if through process knowledge the generator will certify that this constituent is not present.
 - i. Total oil and grease.
 - j. Polychlorinated biphenyls (PCB).
 - k. Total suspended solids.
 - l. Radionuclides. Note: This analysis will not be required if through process knowledge the generator will certify that these constituents are not present.
3. Generators may composite samples if an approved statistical sampling plan is prepared and documented. The sampling plan must be reviewed and approved by the Plant Waste Disposal Coordinator (PWDC) and CNF Process Engineer.

4. Samples for a specific waste stream will not be required after initial characterization if the generator can certify that the characteristics of the waste have not changed.
5. Re-characterization of all waste streams must be performed as determined by the generator and at least annually.
6. No classified wastes will be received at the CNF without Security Department approval.
7. Unless exempted by the Facility Engineer, all wastes sent to the CNF for treatment shall be accompanied by a properly executed Request for Disposal of Waste Materials and Equipment (UCN-12463) or a copy of the same.

B. Stream Specific Requirements

1. TSCA Incinerator Waste Water: The following analyses must be performed on each tank or batch of waste water sent to the CNF from the TSCA incinerator. Note: The named analyses are based on previous characterization. According to review of the burn plan, additional analyses may be required prior to transfer to the CNF.
 - a. Total suspended solids (TSS)
 - b. PCB
2. K-1420 Decontamination/Metals Finishing Facility: In addition to the above identified general analytical and certification requirements, the following analyses must be performed on each batch of waste water sent to the CNF from the Floor Pan, Cylinder Cleaning Effluent Treatment Facility.
 - a. Duplicate confirming uranium analyses
 - b. pH

C. Maximum Constituent Concentration

Note: The concentration limits provided below are based on the assumption that required treatment will be elementary neutralization and precipitation. Additionally, the limits are also established based upon the present NPDES discharge requirements. Receipt of a new NPDES permit may require adjustment to these concentration limits which will be issued in an updated waste acceptance criteria. Furthermore, these limits are not intended to define the total treatment capability of the CNF. Concentrations which exceed these values will require advance time for additional testing and evaluation to determine the appropriate treatment scheme.

1. Cadmium: 2.6 mg/L
2. Chromium: 2.89 mg/L
3. Copper: 20.7 mg/L
4. Lead: 14.3 mg/L
5. Nickel: 17.0 mg/L
6. Silver: 1.2 mg/L
7. Zinc: 9.25 mg/L
8. Cyanide: 0.65 mg/L (total cyanide at pH = 7.0)
9. TTO: 2.13 mg/L
10. Oil and Grease: 26 mg/L
11. TSS: 270 mg/L
12. PCB: 0.014 μ g/L (detection)
13. Uranium: 160 mg/L
14. ^{234}U : 500 pCi/L*
15. ^{235}U : 600 pCi/L*
16. ^{236}U : 500 pCi/L*
17. ^{238}U : 600 pCi/L*
18. ^{99}Tc : 100,000*
19. ^3H : 2,000,000*
20. ^{36}Cl : 50,000*
21. ^{125}I : 2,000 pCi/L*
22. ^{32}P : 20,000*
23. ^{35}S : 300,000*
24. ^{45}Ca : 50,000*
25. ^{51}Cr : 1,000,000*
26. ^{57}Co : 200,000*
27. ^{65}Zn : 9,000*
28. ^{131}I : 3,000*
29. ^{237}Np : 30*
30. ^{238}Pu : 300,000*
31. ^{239}Pu : 30*
32. ^{228}Th : 400*
33. ^{230}Th : 300*
34. ^{232}Th : 50*
35. ^{137}Cs : 3,000*

*Acceptance of radionuclides will be based upon these values, which represent 100 percent of the Derived concentration Guide (100 mrem/yr exposure as listed in 5400.XX).

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